

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11)

Publication number:

**0 190 776
B1**

(12)

EUROPEAN PATENT SPECIFICATION

(45)

Date of publication of the patent specification:
10.05.89

(51)

Int. Cl.4: **B65D 75/38, B65B 9/10**

(21)

Application number: **86200043.7**

(22)

Date of filing: **10.01.86**

(54)

Package filled with a water-soluble toxic pulverulent or granular product.

(30)

Priority: **14.01.85 NL 8500076**

(43)

Date of publication of application:
13.08.86 Bulletin 86/33

(45)

Publication of the grant of the patent:
10.05.89 Bulletin 89/19

(84)

Designated Contracting States:
DE FR GB NL

(56)

References cited:
**EP-A-0 049 978
EP-A-0 057 768
GB-A-1 054 808
US-A-3 958 749**

(73)

Proprietor: **KONINKLIJKE EMBALLAGE INDUSTRIE VAN
LEER B.V., Amsterdamseweg 206, NL-1182 HL
Amstelveen(NL)**

(72)

Inventor: **Kerry, Peter Reginald, 35 Manston Road,
Burpham Guildford Surrey(GB)**
Inventor: **Lewis, Jeffrey Lloyd, 2 Brickfield Cottages, Old
Park Lane Farnham Surrey(GB)**

(74)

Representative: **van der Beek, George Frans et al,
Nederlandsch Octrooibureau Scheveningseweg 82 P.O.
Box 29720, NL-2502 LS 's-Gravenhage(NL)**

EP 0 190 776 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

The invention relates to a package comprising a filled closed inner container made of a water-soluble flexible material, said inner container being placed inside a closed outer container made of flexible material which is resistant to water.

Such a package is known from GB-A 1 054 808.

Some chemical products, in particular certain agricultural chemicals, are so toxic that they must not come into contact with parts of the human body. This requirement may present problems both in the filling of packages and in releasing the chemicals from the packages.

The inner container as well as the outer container of the known package is made of two rectangular sheets; the circumferential edge strips of the four sheets are connected on each other by heat sealing. To facilitate opening of the package the sealing line is taken at an angle and at spacing from one corner, thereby to leave two lips on the respective sheets which may be parted with the fingers to start a tearing open operation for release of the packaged material. The risk of a person opening this known package coming into contact with the packaged material is considerable. This is an inadmissible objection to the known package if it would be used for toxic chemicals.

The object of the invention is to construct a package of the above type in a manner such that during the transport of the filled packages and during the release of the substance concerned from the packages, the risk of anyone coming into contact with the substance is restricted to a minimum.

According to the invention the above mentioned package is characterized in, that the inner container filled with a water-soluble toxic pulverulent or granular product consists of a flexible tube which is closed near its two ends by a transverse joint, an end strip extending outwards from each of said transverse joints, and that the outer container also consists of a flexible tube, which is closed near its two ends by a transverse joint, each of said end strips of the inner container being connected to a transverse joint of the outer container, and that a tear line is made in one of the end strips of the inner container.

The outer container which is not separately filled with product forms a protection for the filled inner container against moisture and mechanical effects. In order to release the packed substance, the outer container is cut open and the inner container is removed from the outer container by tearing and is deposited in water where the film of the inner container and the toxic filling dissolve.

The invention further relates to a device for the manufacture of filled packages, comprising an upper pipe, means for placing around the upper pipe a first continuous tube of film or laminate, welding means of making a transverse joint all the way across the first tube, a lower pipe for receiving the first tube, means for placing a second continuous tube of film or laminate around the second pipe and welding means for making a transverse joint all the way across the first and second tube.

Such a device is known from EP-A 49 978.

To make such a device suitable for the manufacturing of packages for toxic pulverulent or granular product as described above, it should meet the following conditions: the welding means of making a transverse joint all the way across the first tube consists of two sets of welding elements spaced in the vertical direction, said sets being able to make two transverse joints and an end strip there between; the device comprises means of making a tear line in the end strips and it comprises supplying means for the metered supply of product to the upper pipe.

The outer container could consist of a laminate of an optionally metallized film, kraft paper and a coating.

The invention will now be explained in more detail by reference to the figures.

Figure 1 shows a side view of a package according to the invention.

Figure 2 shows a longitudinal cross-section along the line II-II in Figure 1.

Figure 3 shows a transverse cross-section along the line III-III in Figure 2.

Figure 4 provides a diagrammatic view of a device for the manufacture of the filled packages.

The invention is concerned with packages for toxic substances, for example agricultural chemicals, which must not come into contact with the human body both during the filling and packaging and during the transport of the packages and the release of the toxic substances from the packages.

The packages shown in Figures 1, 2, 3 incl. comprise two containers 1, 2 consisting of plastic film or a laminate.

The inner container 1 is manufactured from a water-soluble material, for example from polyvinyl alcohol. It is filled with a water-soluble toxic powder or granular product 3. The outer container 2 acts as protection for the inner container 1 against moisture and mechanical effects. Naturally, the outer container is manufactured of a material which is resistant to water, for example a laminate of metallized polyester film, kraft paper and a coating of polyvinyl alcohol.

Both the inner and the outer containers consist of a tube which is closed at two ends by a transverse joint 4 or 5 respectively. The end strips 6 of the inner container 1 are connected at their ends to a transverse joint 5 of the outer container 2. In one of the end strips 6 a tear line 7 is perforated. The transverse joints are intended to be normal heat welds.

In order to use the contents of the package, the package should be cut through approximately at the position of the arrow 8, after which the filled inner container can be torn out of the outer container (making use of the tear line 7) and can be ejected into water. At room temperature the material of the inner container can dissolve in water in a short time (for example, 1 minute) and the toxic product 3 (for example, a granular herbicide) is released. Contact with the fingers or other parts of the body is entirely avoided.

To manufacture the said package use can be

made of the device according to Figure 4. This comprises two form-fill-seal (FFS) machines 11, 12 following each other. Each of the machines has a filling pipe 13 or 14 respectively, a supply device 15 or 16 respectively for packaging material which is wrapped around the filling pipe 1 or 14 respectively, a longitudinal welding device 17 or 18 respectively to weld the overlapping ends of the packaging material to each other to form a packaging tube, and transverse welding elements 19 or 20 respectively to close the inner tube and the outer tube respectively. The transverse welding elements 20 also serve to join the end strip 6 projecting beyond the transverse weld 4 of the inner container 1 to the outer container 2.

The filling pipe 13 is connected via a funnel 21 to a metering device for the metered supply of toxic pulverulent or granular material. This device may, inter alia, be controlled by feedback by means of a weighing device which weighs the finished packages and transmits corrective signals to the metering device.

The transverse welding elements 19 of the outer container are connected to a stationary support 22 and can only move perpendicularly to the direction of movement of the formed package. There are two pairs of transverse welding elements 19 between which a perforator 23 is situated for forming the tear line 7 in the packages.

On the other hand, there is only one pair of transverse welding elements 20 which is mounted on a support 24 movable vertically upwards and downwards. The elements 20 can move on the support 24 perpendicular to the direction of movement of the package. A knife 25 with a stop can be mounted in the elements 20 to separate the finished packages from each other.

It will be clear that the filling of the packages with a toxic substance takes place fully automatically and without human contact. As is made clear above, the dissolving of the toxic substance in water can also take place without contact with the hands.

EXAMPLE OF A PACKAGE

A package for 1 kg of granular herbicide having a density of 0.8–0.9 g/cm³ and a grain size between 0.5 and 1.0 mm consisted of an outer container with a length of 385 mm and a width of 215 mm, the sheet from which the outer container was made having a width of 450 mm. The material of the outer container was a laminate of the following composition:

- 12 micron of metallized polyester film
- 40 g/m² kraft paper
- 35 g/m² of polyvinyl alcohol coating.

The inner package manufactured from a polyvinyl alcohol film having a thickness of 35 micron had a length of 275 mm and a width of 165 mm. The initial sheet had a width of 350 mm. This film could dissolve in water at ambient temperature within one minute. The film thickness can be somewhat greater, for example 50 or 70 micron.

It is important that the water-soluble container occupies a fixed position inside a flexible outer container resistant to water and that after the cutting open of the package the inner package with its dan-

gerous contents remains inside the outer package until it is torn safely out of the outer container along the tear line.

Claims

1. Package comprising a filled closed inner container (1) made of a water-soluble flexible material, said inner container being placed inside a closed outer container (2) made of flexible material which is resistant to water, characterized in, that the inner container (1) filled with a water-soluble toxic pulverulent or granular product consists of a flexible tube which is closed near its two ends by a transverse joint (4), an end strip (6) extending outwards from each of said transverse joints (4), and that the outer container (2) also consists of a flexible tube, which is closed near its two ends by a transverse joint (5), each of said end strips (6) of the inner container (1) being connected to a transverse joint (5) of the outer container (2), and that a tear line (7) is made in one of the end strips (6) of the inner container (1).

2. Device for the manufacture of filled packages according to claim 1, comprising an upper pipe (13), means (15) for placing around the upper pipe (13) a first continuous tube of film or laminate, welding means (19, 23) of making a transverse joint all the way across the first tube, a lower pipe (14) for receiving the first tube, means (16) for placing a second continuous tube (16) of film or laminate around the second pipe (14) and welding means (20) for making a transverse joint all the way across the first and second tube, characterized in, that the welding means of making a transverse joint all the way across the first tube consists of two set of welding elements (19, 23 respectively) spaced in the vertical direction, said sets of welding elements being able to make two transverse joints (4, 5) and an end strip (6) there between, means being present of making a tear line (7) in the end strips, and that the device has supplying means for the metered supply of product to the upper pipe (13).

Patentansprüche

1. Verpackung, die einen gefüllten, geschlossenen, inneren Behälter (1) aus einem wasserlöslichen flexiblen Material aufweist, wobei der innere Behälter im Inneren eines geschlossenen, äußeren Behälters (2) aus einem flexiblen Material angeordnet ist, das wasserbeständig ist, dadurch gekennzeichnet, daß der innere Behälter (1) mit einem wasserlöslichen, giftigen, pulverigen oder körnigen Produkt gefüllt ist, das ein flexibler, schlauchförmiger Teil aufweist, das in der Nähe der beiden Enden mittels einer Querverbindung (4) geschlossen ist, das ein Endstreifen (6) von jeder der Querverbindungen (4) nach außen verläuft, und daß der äußere Behälter (2) ebenfalls ein flexibles, schlauchförmiges Teil aufweist, das in der Nähe der beiden Enden mittels einer Querverbindung (5) geschlossen ist, wobei jeder der Endstreifen (6) des inneren Behälters (1) mit einer Querverbindung (5) des äußeren Behälters (2) verbunden ist, und daß eine Reißlinie (7) in einem

der Endstreifen (6) des inneren Behälters (1) vorgesehen ist.

2. Vorrichtung zum Herstellen der gefüllten Verpackungen nach Anspruch 1, die einen oberen, schlauchförmigen Teil (13), eine Einrichtung (15), welche um das obere schlauchförmige Teil (13) ein erstes, durchgehendes schlauchförmiges Teil aus einer Folie oder einem Laminat anordnet, eine Schweißeinrichtung (19, 23) zur Herstellung einer Querverbindung an dem ersten schlauchförmigen Teil, ein unteres, schlauchförmiges Teil (14) zur Aufnahme des ersten schlauchförmigen Teils, eine Einrichtung (16), welche ein zweites, durchgehendes Schlauchteil (16) aus einer Folie oder einem Laminat um das zweite schlauchförmige Teil (14) vorsieht, und eine Schweißeinrichtung (20) zur Herstellung einer Querverbindung über die ersten und zweiten schlauchförmigen Teile hinweg aufweist, dadurch gekennzeichnet, daß die Schweißeinrichtung zur Herstellung einer Querverbindung über das gesamte erste, schlauchförmige Teil hinweg zwei Sätze von Schweißelementen (19, beziehungsweise 23) aufweist, die in vertikaler Richtung in Abstand angeordnet sind, wobei die Sätze von Schweißelementen die beiden Querverbindungen (4, 5) und einen Endstreifen (6) dazwischen ausbilden können, daß eine Einrichtung zum Herstellen einer Reißlinie (7) in den Endstreifen vorgesehen ist, und daß die Vorrichtung eine Zufuhreinrichtung für eine zugemessene Produktmenge zu dem oberen, schlauchförmigen Teil (13) hat.

Revendications

1. Emballage comprenant un réceptacle intérieur (1) fermé et rempli, réalisé en un matériau souple soluble dans l'eau, ce réceptacle intérieur étant placé à l'intérieur d'un réceptacle extérieur (2) fermé, réalisé en un matériau souple résistant à l'eau, caractérisé en ce que le réceptacle intérieur (1) rempli d'un produit toxique pulvérulent ou granulaire soluble dans l'eau consiste en un tube souple qui est fermé près de ses deux extrémités par un joint transversal (4), une bande d'extrémité (6) s'étendant vers l'extérieur depuis chacun des joints transversaux (4), en ce que le réceptacle extérieur (2) consiste également en un tube souple qui est fermé près de ses deux extrémités par un joint transversal (5), chacune des bandes d'extrémité (6) du réceptacle intérieur (1) étant reliée à un joint transversal (5) du réceptacle extérieur (2), et en ce qu'une ligne de déchirement (7) est ménagée sur l'une des bandes d'extrémité (6) du réceptacle intérieur (1).

2. Dispositif pour fabriquer des emballages remplis conformes à la revendication 1, ce dispositif comprenant un tuyau supérieur (13), des moyens (15) pour placer autour du tube supérieur (13) un premier tube continu de film ou de stratifié, des moyens de soudage (19, 23) pour réaliser un joint transversal sur toute la largeur du premier tube, un tuyau inférieur (14) destiné à recevoir le premier tube, des moyens (16) pour placer un second tube continu de film ou de stratifié autour du second tuyau (14) et des moyens de soudage (20) pour réaliser un joint transversal sur toute la largeur des pre-

mier et second tubes, caractérisé en ce que les moyens de soudage pour réaliser un joint transversal sur toute la largeur du premier tube sont constitués de deux jeux d'éléments de soudage (respectivement 19, 23) espacés dans la direction verticale, ces jeux d'éléments de soudage étant capables de réaliser deux joints transversaux (4, 5) et une bande d'extrémité (6) entre ces deux joints, des moyens étant prévus pour ménager une ligne de déchirement (7) dans les bandes d'extrémité, et en ce que le dispositif comporte des moyens d'amenée pour amener au tuyau supérieur (13) une quantité dosée du produit.

fig-1

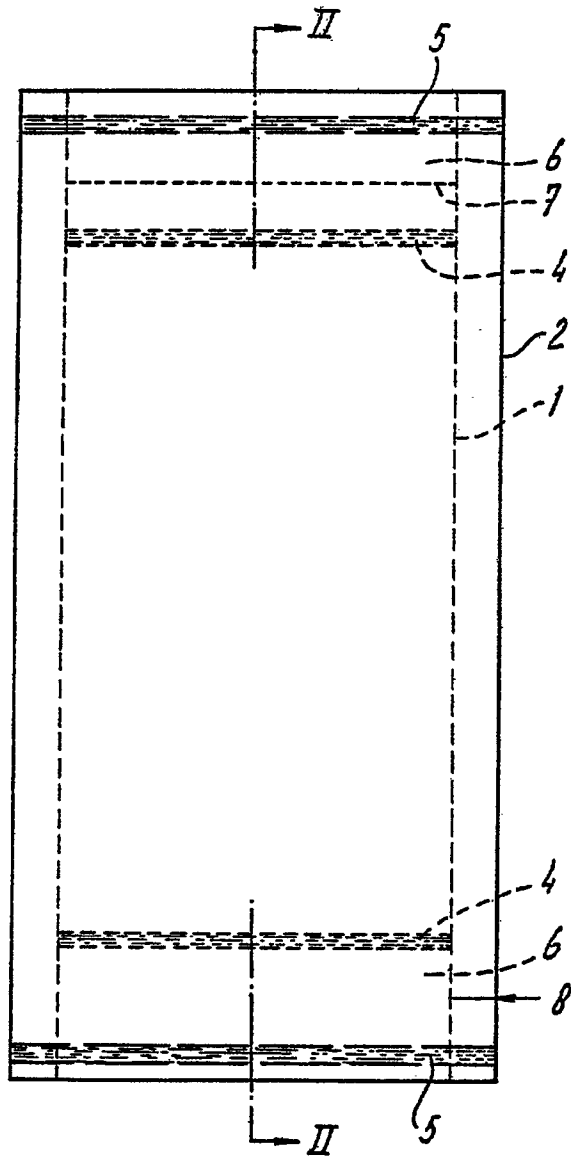


fig-2

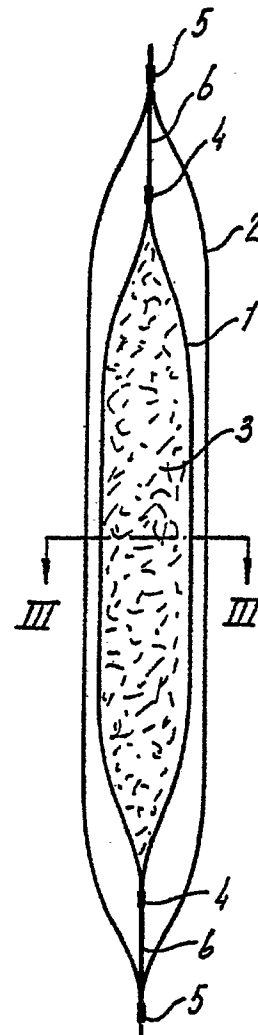


fig-3

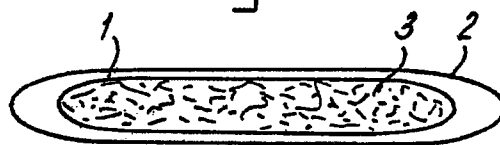


fig-4

